Sixteenth Street Bridge
Spanning Piney Branch Parkway
Washington
District of Columbia

HAER No. DC-29

PHOTOGRAPHS
WRITTEN HISTORICAL AND DESCRIPTIVE DATA
REDUCED COPIES OF MEASURED AND INTERPRETIVE DRAWINGS

Historic American Engineering Record
National Park Service
U.S. Department of the Interior
Washington, DC 20013-7127

HISTORIC AMERICAN ENGINEERING RECORD
SIXTEENTH STREET BRIDGE
HAER No. DC-29

Location: Sixteenth Street Bridge, located in the northwest section of Washington, D.C., is just south of the intersection of this north-south artery and Arkansas Avenue. The bridge spans the Piney Branch Valley, an eastern arm of Rock Creek Park, and the two-lane Piney Branch Parkway.

Date of Construction: 1907-10.

Designer and Builder: Built by the Pennsylvania Bridge Company and Cranford Paving Company. Designed and directed by the D.C. Bridge Division. Sculpture by Alexander Phimister Proctor.

Present Owner: Department of Public Works, District of Columbia.

Present Use: Vehicular and pedestrian bridge.

Significance: This bridge was the first parabolic arch constructed in the United States. Its concrete masonry, faced with sandstone and pebble aggregate, conforms with the model for park crossings established by the Connecticut Avenue Bridge (1897-1907, HAER No. DC-6).

Project Information: The documentation of Rock Creek and Potomac Parkway was undertaken as a two-year pilot project to help establish standards and guidelines for recording the structures and landscape features of park roads and parkways. This project was a joint effort of the Historic American Buildings Survey and the Historic American Engineering Record (HABS/HAER), a combined division of the National Park Service, Robert Kapsch, chief. The project was sponsored by the Park Roads Program of the National Park Service, John Gingles, deputy chief, Safety Services Division. The project supervisor was Sara Amy Leach, HABS historian.

The Washington-based summer 1992 documentation team was headed by landscape architect Robert Harvey (Iowa State University-Department of Landscape Architecture) who served as field supervisor; the landscape architects were Deborah Warshaw (University of Virginia) and Dorota Pape-Siliwonczuk (US/ICOMOS-Poland, Board of Historical Palaces and Gardens Restoration); the architects were Evan Miller (University of Colorado-Boulder), Steven Nose (University of Maryland), and Tony Arcaro (Catholic University). The historians were Tim Davis (University of Texas) and Amy Ross (University of Virginia). Jack E. Boucher made the large-format photographs; Air Survey Corporation of Sterling, Virginia, produced the aerial photography and digital mapping from which the site-plan delineations were made.

History of the Design

Prior to the erection of the present structure--which cost $135,000--the bridge at this site had masonry abutments and a wood-beam superstructure.[1] Its form and impermanence rendered it obsolete by the early twentieth century. The concrete, single-span parabolic arch that replaced it fits into the pattern of masonry-arch crossings established in the lower park by the Connecticut Avenue Bridge.

As the first parabolic arch built in the United States, the Sixteenth Street Bridge is a noteworthy engineering feat. The unusual feature of the parabolic arch is the curve of the arch ring.[2]; the unreinforced arch is 5' thick at the crown.[3]

The span is composed of two large parallel arches. Only one of the twin arches was built initially. After the second arch was erected in 1909, the bridge had a width of 65'. The two arch ribs are 25' wide each, and the 15' between them is spanned by 24" steel beams placed 10' apart.[4]

Design and Description

Each of the unreinforced, parallel arches span 125' and were poured in place in sections. The original work cost approximately $50,000, and the second arch added about $85,000.[5] These large arches are connected to the deck by reinforced-concrete spandrel beams.[6] Curtain walls enclose the spandrels and give the overall design a massive quality. A net of face bars on the surface of the solid spandrel walls help resist cracking of its face. In addition to the spandrel beams, the floor slab, pilasters, and bracing are also made of reinforced concrete.[7]

Smooth concrete pilasters flanking the arch have the appearance of structural abutments but are purely decorative. Pebble aggregate covers the surface. The triple-arch ring and coping on the face of the bridge are finished with smooth concrete.

The bridge has a 272' overall length. After 1910, with the addition of the second arch, its roadway was 45' wide and sidewalks 8'-8". The bridge rises 60' above valley with a vertical highway clearance of 25'. The concrete deck has an asphalt surface; north and south abutments are concrete.[8] The bridge carries a 36" water main beneath its deck and between the parallel arches.

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[1] Department of Highways, Washington, D.C., A Pictorial Report on Highway Bridges and Structures in the District of Columbia (Washington, D.C.: Department of Highways, 1948), 55.

[2] Donald Beekman Myer, Bridges and the City of Washington (Washington, D.C.: U.S. Commission of Fine Arts, 1974; reprint, 1983), 73-74.

[3] Henry Grattan Tyrrell, History of Bridge Engineering (Chicago: By the author, 1911), 401.

[4] Tyrrell, 401.

[5] Tyrrell, 401.

[6] William Bushong, Historic Resource Study: Rock Creek Park, District of Columbia (Washington, D.C.: National Park Service, 1990), 176.

[7] Frank B. Scheetz, "Chapter VI: Bridges," Planning and Building the City of Washington, ed. by Frederick Haynes Newell (Washington, D.C.: Ransdell Inc., 1932), 120.

[8] District of Columbia-Department of Public Works, Annual Bridge Inspection Report, 16th Street Bridge. Last inspected 26 October 1988.

The four tigers--a pair flanking both ends--were designed by sculptor Alexander Phimister Proctor (1862-1950) in 1910. Proctor later designed the bisons on the Q Street (or "Buffalo") Bridge (1916). Sixteenth Street's bronze tigers occupy granite pedestals.

Alterations

Both the setting and deck of this bridge have changed over the years. Since 1934, the Piney Branch parkway--built as one of District's Construction Works Administration road-building projects--has passed beneath it.[9] In the mid 1960 the original light fixtures were removed and replaced with two cobra-arm poles, mounted on two of the four pedestals that supported the original fixtures. In the late 1970s, a safety fence of extruded aluminum was placed on the existing balustrades. This fence adds approximately 4' to the height of the existing facility and detracts significantly from the bridge design as viewed from the Piney Branch Parkway.

The roadway on top has recently been expanded to 50' across to contain five 10' lanes. The easterly sidewalk was reduced to approximately 4' across, and the westerly sidewalk to 7'.[10] A renovation, completed in 1992, included cleaning the tigers and replacing the road surface. A safety-tested steel guardrail was also installed along the northern curb.

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Summer 1992

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[9] Note dated 4 February 1934, "Sixteenth Street Bridge," Project file, RG66.

[10] Government of the District of Columbia, Department of Public Works, Environmental Assessment, Section 4 (f): Evaluation for the Rehabilitation of 16th Street Bridge, N. W. (Unpublished report, May 1988), section 1.3.

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ADDENDUM TO:
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